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ABSTRACT

Most studies of mail survey methodology focus on specific design elements, but several major reviews of research have attempted to synthesize the findings of independent empirical studies. This study examined the review articles for what they have to say about factors influencing response rates and for their methodology. A literature review identified nine articles for the study, containing 329 source studies. None of the reviews appeared in education or psychology journals, and none were located through a search of the ERIC database. There was considerable variation among the articles about response rate facilitation, and there was considerable variation in the methodological quality of the studies reported. Findings were inconclusive regarding sponsorship, questionnaire length, personalization, anonymity, and appeals as they related to response rates. Saliency, school or army populations, and colored paper appeared to facilitate response rates while marketing background of the author was an inhibitor. Overall, the study called attention to the disparity with which procedures used in the integrated review articles were documented. (Contains 2 tables, 3 figures, 26 references, and 9 citations of review articles.) (SLD)

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Factors Influencing Mail Survey Response Rates: What Do We Really Know?

According to Dillman (1991), the predominant sample survey method used in this country is the mail survey. As such, it has been the subject of a considerable body of research. Most studies of mail survey methodology focus on specific design elements, but several major reviews of research that attempt to synthesize the findings of the independent empirical studies and to identify the techniques that reliably stimulate responses in mail surveys have been published. In addition, other less comprehensive reviews focusing on specific survey design variables have been published. The methods used by the researchers in these reviews have varied, and not all of the more recent studies have utilized quantitative analytical procedures. The relative merit of the findings are somewhat dependent on the way in which the reviews were conducted and reported, of course, but both types of reviews can provide valuable information for other researchers in this field regarding mail survey procedures and potential publication avenues for research on mail surveys.

Reviews of research are expected to preface new research studies but are also sometimes conducted on a more extensive scale as independent endeavors. Much less attention has been placed on methods for conducting and reporting reviews of previous research studies than on new or primary research studies. Jackson (1980) focused on integrative reviews of research, documenting and evaluating various methods by which they had been accomplished. The use of meta-analysis provided a major change in comparing the results of multiple studies. Cooper (1989) noted that the reviewing of previous research studies had been facilitated by the recent availability of computerized literature searches and the development of quantitative procedures for analysis.

The purpose of the present study was to examine the review articles themselves, identifying procedures and potential publication sources for use by those interested in the study of mail survey methods. For purposes of this study, review articles are limited to those that are comprehensive in nature and focus on identifying techniques that facilitate response rates in mail surveys. In the present context, "comprehensive" is defined as including several survey design variables that have possible impacts on survey response rates, and "source studies" are the citations (published or unpublished, including books) referenced by the review author(s) that were included in their quantitative analyses or that contributed to the formulation of their conclusions in qualitative reviews.

Method

Procedures for Identifying Review Articles

The first step in identifying review articles was to search computerized CD-ROM databases containing abstracts in the fields of psychology, sociology, business and marketing, and education. The

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databases used were PSYCLit (1974-1992), Sociofile (1974-1992), ABI/Inform (1987-1992), and ERIC (1966-1992). Yu and Cooper (1983) had used "response rate" and "survey" in searching for articles for their review. Yammarino, Skinner, and Childers (1991) used "response rates" and "mail surveys" as key words. An initial list of abstracts from each database was compiled by using the key words "response rate" or "response rates" and "mail survey" or "mail surveys." The ABI/Inform database searched only for the singular forms, amending the plural to the singular for both "rates" and "surveys." Jackson (1980), in searching for review articles, had looked for articles under the headings of "literature reviews" and "research reviews." Further defining the scope of the present search by adding the term "research review" or "literature review" was too limiting, however, sometimes producing no citations, so the more inclusive initial lists were used. Reference lists in the review articles identified through the computer searches were examined for other review articles not included in the computer databases.

Four acceptable review articles were found in PSYCLit among the 109 articles identified as containing "response rate" or "response rates" and "mail survey" or "mail surveys." Four review articles were among the 74 abstracts listed from ABI/Inform, and two from the 66 drawn from Sociofile. There were no review articles that met the criteria for this study among the 137 abstracts produced by the ERIC searches. Some of the acceptable review articles appeared in more than one database. One review article was indexed in three of the databases, two were found in both PSYCLit and ABI/Inform. When duplication was eliminated, there were six review articles that met the criteria for inclusion in the present study. Examination of the reference lists from those articles produced three additional reviews for the total of nine that serve as the basis for this study (see References: Reviews Included in the Study).

Selection of Reviews

Some of the review articles initially identified were not included in this study because they focused solely on a specific aspect of survey design, such as monetary incentives (Armstrong, 1975), cover letter personalization (Worthen & Valcarce, 1985), or type of postage used (Armstrong & Lusk, 1987). One review (Yu & Cooper, 1983) that was not included was not limited to mail surveys, and it did not distinguish between mail surveys and other types of surveys in the presentation of many of the findings. Berdie, Anderson, and Niebuhr (1986) also went beyond mail surveys. Houston and Ford's (1976) review examined response speed and quality, rather than response rate, and was excluded from the present study. Reviews that did not contain or make available a list of the source articles, such as Goyder (1982), were also not included. Dillman (1991) cited specific studies to illustrate the points he made regarding specific mail survey techniques as part of a comprehensive system for conducting a survey. Jobber and Saunders (1993) limited their review and model development to mail surveys of commercial populations.

Variables

For each review article, the following information was sought: date and journal in which the review article appeared, type of analysis used, criteria for inclusion of source studies, findings, number of source studies, years and journals in which source studies were published, method by which source studies

were identified. When discrepancies appeared between reference lists in the listings of source articles, the original articles were obtained to determine the correct reference listing.

Source Studies

Some review articles (Bruvold & Comer, 1988; Fox, Crask, & Kim, 1988; Hebeflein & Baumgartner, 1978; Yammarino, Skinner, & Childers, 1991) provided reference lists of the articles used in the quantitative analysis (source studies) and separate lists of references providing background or introductory material. This clearly identified the source studies, although the titles of some of the source studies did not clearly delineate them as relevant for mail surveys. In Conant, Smart, and Walker (1990), the review of articles to determine response facilitation techniques was only the first stage in a more involved study. The relevant citations were included in a single table, making them easy to discern.

For the other four reviews, the two researchers independently read the articles and determined which sources were background or general references and which should be included as source studies. They then compared their lists and resolved discrepancies through discussion and clarification of the criteria for inclusion. It was decided that references that were cited as leading to the conclusions of the review author should be included, even though they were unpublished works, books, or articles that appeared to be inappropriate because their titles indicated a focus on surveys other than those conducted through the mail.

A total of 329 source studies was used in the nine review articles. Some source articles were referenced incorrectly, initially causing them to be considered additional articles. Differences (errors) occurred in publication year, journal pages and/or volume number, journal title, author, spelling of author's name, and even title of the article.

The following information for each source study was entered into a Fox Base/MAC database: author(s), year of publication, journal in which it was published, and which review articles had used the study. Citation as a reference in each of the nine review articles was coded as a dichotomous variable. Because of the small number of review articles and the varying procedures used in them, frequency distributions were used in analyzing the data in addition to descriptions of the reviewers' procedures.

Results

Publication of Review Articles

Three of the nine reviews were published in Public Opinion Quarterly, three in marketing research journals (Journal of the Market Research Society and Journal of Marketing Research), and one each in the Journal of Business Research, Journal of Management, and the American Sociological Review (see Table 1). None of the reviews appeared in either education or psychological journals.

Procedures Used in Review Articles

Four of the reviews utilized quantitative analyses, while the other five could best be described as qualitative. In general, the quantitative review articles contained better documentation of the methods used than the qualitative reviews. For example, none of the five qualitative reviews contained

information about how the source articles were identified or the criteria for inclusion. The four quantitative reviews, in contrast, were detailed in describing methods for locating the articles, selection criteria, and analysis.

Locating Source Studies

Heberlein and Baumgartner (1978), the earliest quantitative review, did not use computerized searches, as did authors of the later quantitative reviews. Computerized search services were relatively new at that time. Heberlein and Baumgartner published their review in a sociology journal. The Sociofile indexing system in use today (which indexes journals in the field of sociology) only dates back to 1974, as does PSYCLit. Social SciSearch began in 1972. The primary source of articles for the Heberlein and Baumgartner review was an annotated bibliography by Potter, Sharp, Hendee, and Clark (1972) containing 193 citations, supplemented by manual reviews of journals and citations in the published articles that were located. The review authors did not, however, identify the journals which were searched manually.

Table 1

Review Article	Pub. Year	Journal	No. Source Articles	Analysis
Yammarino, Skinner, & Childers	1991	Public Opinion Quarterly	115	meta-analysis
Conant, Smart, & Walker	1990	Journal of the Market Research Soc.	52	qualitative
Fox, Crask, & Kim	1988	Public Opinion Quarterly	40	meta-analysis
Bruvold & Comer	1988	Journal of Business Research	212	weighted-least-squares logit regression
Harvey	1987	Journal of the Market Research Soc.	129	qualitative
Duncan	1979	Journal of Management	60	qualitative
Heberlein & Baumgartner	1978	American Sociological Review	95	quantitative
Kanuk & Berenson	1975	Journal of Marketing Research	69	qualitative
Linsky	1975	Public Opinion Quarterly	57	qualitative

Bruvold and Comer (1988), began with the list of studies used by Heberlein and Baumgartner. This was supplemented by manual searches of five journals (Journal of Marketing Research, Journal of Marketing, Public Opinion Quarterly, Journal of Business Research, and Journal of Applied Psychology) for the years 1964-1980. The reviewers also conducted computer searches on six databases: Social SciSearch,

PsychINFO, ABI/Inform, Sociological Abstracts, U.S. Political Science Documents, and ERIC. For key words, they used "response rate" and "mail survey or mail questionnaire." They included only published journal articles and one reference published in a conference proceedings.

Fox, Crask, and Kim (1988) conducted a manual search of three of the same journals as Bruvold and Comer (Journal of Marketing Research, Public Opinion Quarterly, and Journal of Applied Psychology) for the previous 25 years or, in the case of the Journal of Marketing Research, since 1964 when it began publication. They also did a computerized search using PsychINFO and examining the reference lists from relevant articles. The keywords used in the computer search were not identified. The reviewers used only published articles that were experimental studies. Response rate variables that were coded subjectively, such as "salience" that had been included in the Heberlein and Baumgartner (1978) study, were not considered.

Yammarino, Skinner, and Childers (1991) began by examining reference lists of previously published review articles, including Kanuk and Berenson (1975), Linsky (1975), Heberlein and Baumgartner (1978), Yu and Cooper (1983), Harvey (1987), and Fox, Crask, and Kim (1988). They then conducted computer searches of the following databases: ABI/Inform, ERIC, Social SciSearch, Sociological Abstracts, and PsycINFO. The keywords of "mail surveys," "response rates," were used and also combined with the names and synonyms for the 17 response rate variables targeted for study. To identify recent studies (1978 and later), a manual search of each of the following ten journals was performed: American Sociological Review, Journal of the Academy of Marketing Science, Journal of Advertising Research, Journal of the American Statistical Association, Journal of Applied Psychology, Journal of Marketing, Journal of Marketing Research, Journal of the Market Research Society, Psychological Reports, and Public Opinion Quarterly. To be included, the source studies had to have a manipulated factor and had to include response rates for the various conditions.

Selection Criteria Differences

Six of the reviews limited their source citations to published articles (Duncan, 1979; Fox, Crask, & Kim, 1988) and a published book (Kanuk & Berenson, 1975) or proceedings (Bruvold & Comer, 1988; Conant, Smart, & Walker, 1990; Heberlein & Baumgartner, 1978). The other three reviews (Linsky, 1975; Harvey, 1987; Yammarino, Skinner, & Childers, 1991) included one or more unpublished papers and, in the Yammarino, Skinner, and Childers review, five unpublished studies cited in a Public Opinion Quarterly review by Armstrong and Lusk (1987).

Each of the eight books was cited in only a single review. With one exception, the unpublished papers were also unique to a single review, as were the five unpublished studies cited by Armstrong and Lusk (1987). There was only one instance of duplication among the studies cited from meeting proceedings.

Three journals accounted for almost half of the source studies (see Table 2). One fourth of the source studies had been published in Public Opinion Quarterly. The Journal of Marketing Research and the Journal

Table 2

Publication Sources of Studies Cited in Reviews

Journal	Source Studies	
	Number	Per Cent
Public Opinion Quarterly	83	25.2
Journal of Marketing Research	41	12.5
Journal of Applied Psychology	33	10.0
Journal of Marketing	14	4.3
Journal of Advertising Research	14	4.3
American Sociological Review	13	4.0
Journal of the Market Research Society	10	3.0
Journal of the Academy of Marketing Science	7	2.1
Journal of the American Statistical Association	7	2.1
Psychological Reports	6	1.8
Sociology and Social Research	5	1.5
Journal of Business Research	4	1.2
Journal of Personality and Social Psychology	4	1.2
Printers Ink	3	0.9
American Marketing Association Educators' Conference Proceedings	3	0.9
Journals publishing two source articles (10 journals)	20	6.1
Journals publishing one source article (44 journals)	44	13.4
Books	8	2.4
Unpublished manuscripts	5	1.5
Studies cited in previous publication but not published independently	5	1.5

of Applied Psychology accounted for another 22.5 percent of the studies. Fifty-four journals included had published no more than two of the cited source studies.

Analytic Procedures

Heberlein and Baumgartner (1978) based their analysis on procedures introduced by Sudman and Bradburn (1974) and a similar procedure by Glass and Smith (1976), one of the early works on meta-analysis. Bruvold and Comer (1988) endeavored to develop a model to estimate mail survey response rates using a weighted-least squares regression procedure based on Berkson (1944), Flath and Leonard (1979), and Green, Carmone, and Wachspress (1977). Fox, Crask and Kim (1988) labeled their analysis as meta-analysis and described it as similar to that used by Armstrong and Lusk (1987) and Yu and Cooper (1983).

Yammarino, Skinner and Childers (1991) also used meta-analytic procedures, citing Glass (1977), Hunter and Schmidt (1990), and Hunter, Schmidt, and Jackson (1982) as methodological references.

Presentation of Findings in Qualitative Reviews

Linsky (1975), Kanuk and Berenson (1975) and Duncan (1979) utilized tables in summarizing the impact of specific manipulations. Conant, Smart, and Walker (1990) presented a single table summarizing the effects of the various techniques. Harvey (1987) used only text descriptions. None of the three articles appearing in the marketing research journals used quantitative procedures.

Findings From the Reviews

Four of the reviews contain no descriptions of the methods used by the authors in selecting the studies, so the discussion of findings will limited to the remaining five review articles: Bruvold and Comer (1988); Fox, Crask and Kim (1988); Heberlein and Baumgartner (1978); Linsky (1975); and Yammarino, Skinner and Childers (1991). Not all of the review authors chose the same variables to study (see Figures 1, 2, and 3), nor were the variables necessarily defined in the same way. The discussion of findings will have to take into account both the variables and their definitions. It is important to note the variables that were found not significantly related to or predictive of response rate, as well as those that were.

Fox, Crask and Kim (1988) limited their investigations to 10 variables, Yammarino, Skinner and Childers (1991) to 17. Although Linsky (1975) discussed a fairly large number of variables, some had been the subject of only one or two research studies. His summary comments targeted 10 aspects of mail surveys although findings regarding some of them were inconclusive. Heberlein and Baumgartner (1978) coded 71 variables but used only 10 of them in their regression model to predict response rates. Bruvold and Comer (1988) investigated (coded) a fairly large number of variables and derived coefficients or weights for most of them through regression.[1] Most variables used in the latter two reviews were coded 1/0 (present or absent). Also, in meta-analysis, some categories were collapsed to attain sufficient cases for analysis, thus losing some degree of specificity.

Another area that deserves attention is the number of studies that contributed to the conclusions in the review articles. The number of research studies has increased considerably since Linsky's review in 1975. Also, the review articles cannot be considered independent because many, if not most, of the research studies on which they are based are cited in more than one of the reviews.

Heberlein and Baumgartner (1978), after conducting their initial analyses, proceeded to additional analyses in which the effects of contacts and salience were controlled. Yammarino, Skinner and Childers

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[1] In the following discussions, effects in the quantitative reviews will be reported as the percentage of increase or decrease in response rate that can be expected due to the use of the various procedures, although those estimates were not necessarily derived in the same manner. Readers are encouraged to consult the review articles for further details.

(1991) completed their initial meta-analysis, then looked at the potential influence of the survey variables across levels of two moderator variables, year of publication and type of sample.

All five studies considered some form of incentives, attempts to contact, postage, and sponsorship. Length and anonymity were considered in four of the five reviews, personalization and anonymity in three. Results were mixed for some of these variables, but it is important to look at the way in which the variables were operationalized by the various reviewers.

Figure 1

Significant effects

Fox	Yammarino	Linsky	Heberlein[a]	Bruvold
Advance letter	Appeals	Followup	Saliency of topic	Author background*
Monetary incentive	Postage	Precontact	Market research background	Sponsor organization*
Stamped return envelope	Length > 4 pages	High-powered postage	General population	Sample source*
University sponsor		Cash incentive	School/army population	Specific person*
		Other incentive	Employee population	School/Army
		Organization sponsor	Number of pages	General population
		Title of signer	Total no. contacts	Employee population
			Special 3rd contact	Questionnaire:
			Incentive 1st contact	Subject matter*
			Government sponsor	Type of data*
				Nature of data*
				Saliency
				Advance contact
				Follow-up
				Times questionnaire sent
				Second contact
				Third contact
				Monetary incentive
				Other incentive
				Metered postage (out)
				Special stamp (out)
				Year

[a]See article for complete listing of variables coded under this heading

Figure 2

Small Significant, Situation Specific, or Mixed Results

Fox	Yammarino	Linsky	Heberlein[a]	Bruvold
Small Significant Effects	Situation Specific	Mixed Results		
Followup postcard	Include reply	Personalization		
Colored paper	Advance notice	Anonymity		
First class outgoing postage	Stamped/metered return mail	Place and importance of respondent		
	Advance notice	Anonymity		
	Incentives < $1.00	Appeals		
	Incentives ≥ $1.00	Length		
	Followup/repeated contacts			

[a]Detailed list of variables can be ordered from ASIS/NAPS microfiche publications as footnoted in the article.

Incentives

There seems to be little question that including monetary incentives increase response rates, and some indication that nonmonetary incentives may also be effective. If it is within the power of the researcher to use an incentive, the questions are what kind of incentive to use and, if it is a monetary incentive, how much it should be. Some of the researchers adjusted the amount of the incentives to current dollar values. Yammarino, Skinner and Childs (1991) categorized incentives as 50 cents or less, 50 cents to one dollar, more than one dollar, and nonmonetary. Incentives from 50 cents to one dollar were not significantly related to response rate, and monetary incentives in the other two categories appeared to be related to particular populations. Nonmonetary incentives were not significantly related to response rate.

Fox, Crask and Kim (1988) used four values of monetary incentive: 10 cents, 25 cents, 50 cents, and one dollar. Weighted least squares regression was used to calculate the amount of increase in response rate that might be expected with the various incentives from approximately 10% for the 10 cent incentive to 31% for the one dollar incentive. They also adjusted the incentive amounts using the consumer price index but found it was not helpful and ended up using their original, unweighted values.

Heberlein and Baumgartner (1978) found the highest response rate for $1.00 incentive on the first contact, followed by a 25 cent incentive, no incentive, and a non-monetary incentive. Promised incentives produced the lowest response rates. Heberlein and Baumgartner's regression model obtained a percentage of

Figure 3

Variables Not Related or Not Used in Prediction

Fox	Yammarino	Linsky	Heberlein[a]	Bruvold
Deadline	Deadline			Assn. members (sample)
Postscript on cover letter	Sponsorship			Special population
Stamped outgoing mail	Personization			Students
	Non $ incentives			Subscribers
	$.50 - $1 incentive			No. pages
	Appearance			Fourth contact
	Anonymity			Anonymity
	Longer than 4 pages			Regular stamp (out)
	Special return mail			Metered mail (return)
				Special stamp (return)
				Data - product ownership
				Data - behavior of others
				Topic - work org.

[a]Detailed list of variables can be ordered from ASIS/NAPS microfiche publications as footnoted in the article.

increase in response rate due to incentives by multiplying 6.1 times the incentive category values: (0), less than $ .25 (1), $ .25 (2), $ .50 (3), and $1.00 (4).

Bruvold and Comer (1988) coded incentives as monetary and other , using a yes/no (present/absent) coding for each. Monetary incentives were expected to improve response rates by 54%, other types of incentives by 31%. Linsky (1975) concluded that both monetary and nonmonetary incentives produced higher response rates than no incentives, with 25 cent reward appearing to be more effective than lesser amounts.

Attempts to Contact

Another area in which there is agreement is that additional contacts will increase response rates. What form the contacts should take may be the appropriate question. Fox, Crask and Kim (1988) focused on two variables: prenotification by letter which was associated with a 7.7% increase in response rate, and postcard follow-up, associated with 3.5% effect. Yammarino, Skinner and Childs (1991) found preliminary notification and a category referred to as follow-ups/repeated contacts each significantly related to response rate, with preliminary notification having been most effective in research in more recent years

(28.5%). Follow-ups/repeated contacts were more effective with institutional groups (30.6%) than consumer groups.

Heberlein and Baumgartner (1978) found the advance contact and higher numbers of total contacts (from one to six) and follow-ups (from none to five) increased response rates. In their ten-variable prediction model, the total number of contacts was multiplied by 7.4, and a special third contact (in categories by type of contact) by 8.6 to obtain the percentage of increased response.

Bruvold and Comer (1988) coded advance contacts as either used or not used and included a second variable consisting of the number of follow-ups (from zero to four). The 13% increase for advance contacts was the lowest they reported, except for the year in which the study was conducted. The total number of contacts was multiplied by .28 to achieve the anticipated increase due to follow-ups. In addition, they coded the researcher's use of second, third, and fourth contacts, with second (58%) and third (59%) contacts having more influence on response rate than either of the previously mentioned variables.

Linsky (1975) noted that precontacts improved response rates in all studies that he examined, as did postcard follow-up reminders. Reminder letters, however, were as effective as postcards.

Postage

Outgoing Postage. Four of the reviews considered the type of postage used on outgoing mail. There is some, but not conclusive, evidence that special mail may be superior to regular first class, and that first class, stamped and/or special mail produce higher response rates than second, third, or bulk rate or metered postage. Fox, Crask and Kim (1991) used two measures of comparison: first class versus second, third, or bulk rate postage; and stamped versus metered postage. Effect sizes (1.8% and 0.9% respectively) indicated a small impact on response rate favoring use of first-class postage.

Bruvold and Comer (1988) initially coded the use or absence of metered postage, regular and special stamps as independent variables. No coefficient was produced for regular stamps, while metered postage yielded a negative coefficient (- .23), and special stamps a positive one (. 27).

Heberlein and Baumgartner (1978) found no difference between regular mail and other types of first contact. There were some differences between regular mail and special mail for the second, third, and fourth contacts, but the nature and extent of the difference (from 1% to 9%) did not did not consistently favor special mail.[2] While there was significance for a special third contact, that major difference was between personal/phone and no third contact, with regular mail and special mail contacts producing very similar response rates closer to the personal/phone rate of 93.9% than the response rate when no third contact was attempted (50.6%).

Linsky (1975) had only four studies on which to study this issue. The results were mixed, with one study showing special delivery and air mail producing higher response rates than first class, other studies

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[2] The reader is referred the detailed list of variables and results of significance tests that can be ordered from ASIS/NAPS microfiche publications as footnoted in the article.

showing little or no difference between first and third class and between air mail and third class postage. The most dramatic difference was the superiority of airmail special delivery mail over the use of government-franked envelopes.

Return Postage. There was considerable variation in the way return postage was studied. As was true regarding outgoing postage, the results are not uanimous. Fox, Crask and Kim (1988) examined stamped return postage versus business reply envelopes and found a 6.2% increase in response rate for stamped postage. Hand stamped return mail produced higher returns than envelopes mailed with a postal permit in each study examined by Linsky.

For Yammarino, Skinner and Childers (1991), there were two categories for return postage: stamped versus metered (which had more effect with institutional groups than consumer groups) and special delivery versus air mail, which was not significantly related to response rate. Heberlein and Baumgartner (1978) did not find a significant difference between stamps and other types of postage on return envelopes. Bruvold and Comer (1988) coded both incoming metered postage and the use of a special stamp on incoming postage, but neither was included in predicting response rates.

Linsky (1975) concluded that stamped envelopes were also more effective than unstamped envelopes, and a combination of stamps produced higher returns than a single stamp. Both Linsky and Yammarino, Skinner and Childers (1991) found that inclusion of a return envelope significantly improved the response rate.

Sponsorship

Results relating to sponsorship are unclear, partially because the reviews did not study the same types of sponsorship. Part of the problem is due to the statistical requirements for a minimum number of cases in each category. Heberlein and Baumgartner (1978) originally categorized sponsorship as university, government, private, public health, and other, although there were only a small number of studies in the public and other categories. Government sponsorship had the highest average response rate of the remaining groups. Yammarino, Skinner and Childers (1991) found a significant effect for sponsorship, but the meaning is unclear. The authors commented that they did not have enough data points to examine the effect of government sponsorship and had to combine groups within the institutional category. Fox, Crask and Kim (1991) found an effect size of 8.9% favoring university sponsorship. It does not appear that other forms of sponsorship were coded, although the text comments on the comparison between university and business sponsorship.

Bruvold and Comer (1988) coded each of four types of sponsors (university, government, private, and research firms) as present and absent. They found all four types of sponsors had a negative impact on response rate, ranging from -25%for university to - 84% for government sponsorship. Linsky (1975) found response rates from studies with government, commercial, and university sponsorship very close in a single study, but with government sponsorship producing a significantly higher response. In another survey,

higher returns were received when respondents thought the study was conducted by a university laboratory than by the American Cancer Society.

Length

The relationship between questionnaire length, which can be measured in more than one way, and response rate is unclear. Yammarino, Skinner and Childers (1991) coded questionnaire length as four pages or less and greater than four pages. They found that questionnaire length exceeding four pages in length had an adverse impact on response rates. Heberlein and Baumgartner (1978) defined length in two ways, actual number of questions and actual number of pages. They also coded the time required for questionnaire completion (less than 15 minutes, 15 to 29 minutes, 30 to 60 minutes, and more than one hour). None of the three variables had a significant effect on response rate except when salience and number of contacts were controlled, in which case additional questions reduced response rates. The number of pages was multiplied by -.44% to determine the anticipated effect on response rate in Heberlein and Baumgartner's final response rate prediction model.

Bruvold and Comer (1988) also used the number of questionnaire pages to represent length, but this was not included and assigned a role in their prediction model. Linsky (1975) looked at comparison of long and short questionnaires and found a larger number of studies showing no difference than those that did. When differences were found, they did not always favor the short questionnaires.

Personalization

Mixed results were found in the three reviews that considered personalization. It is not clear how this was defined and coded in the Yammarino, Skinner and Childers (1991) study, but it did not produce a significant effect. Heberlein and Baumgartner (1978) categorized whether or not a personally typed address on the envelope was used but found the 10% average difference in response rate (favoring personalization) was not significant. Linsky (1975), considering studies in which the cover letters were hand signed and/or the respondent was addressed by name, reported mixed findings, with over half of the studies achieving higher response rates for personalized letters, and the others nearly balanced between no difference and higher response rates for non-personalized letters. Even at this early stage in the research on survey methods, the suggestion was made that personalization may be less effective in certain circumstances.

Anonymity

This was not significant in the findings of Yammarino, Skinner and Childers (1991), Bruvold and Comer (1988), and Heberlein and Baumgartner (1978). Findings were mixed in the Linsky (1975) review.

Other Variables

There are some other variables which were not examined in a majority of the reviews but for which results should be noted:

Salience - Found to be a factor by both Heberlein and Baumgartner (1978) and Bruvold and Comer (1988), the only two reviews that attempted to code and include it. The possibility of subjectivity in coding this variable calls for additional attention to reliability.

School or Army Population - Strongly linked to response rate by both Heberlein and Baumgartner (1978) and Bruvold and Comer (1988).

Appeals - A significant effect was found by Yammarino, Skinner and Childers (1991), mixed results by Linsky (1975).

Deadline - Both Fox, Crask and Kim (1988) and Yammarino, Skinner and Childers (1991) found inclusion of a deadline for responding did not improve response rates.

Author Background - Marketing background was negatively related to response rate by both Heberlein and Baumgartner (1978) and Bruvold and Comer (1988) while survey background had the strongest relationship (Bruvold and Comer).

Colored Paper - Investigated only by Fox, Crask, and Kim (1988) who found a small significant effect.

Postscript - Use of a postscript encouraging respondents to participate on the cover letter did not increase response rates in the Fox, Crask, and Kim (1988) review.

Both Bruvold and Comer (1988) and Heberlein and Baumgartner (1978) were more detailed in coding the type of population, nature of the sample and questionnaire characteristics than the other reviews. Individuals with a strong interest in these areas are referred to the those two reviews.

Discussion

There is considerable variation among the nine review articles broadly examining mail survey response rate facilitation techniques. These are nine separate, sometimes overlapping, reviews rather than one review replicated eight times. Procedures tend to be better documented in the quantitative reviews, although it is recognized that writing style must be geared to the style preferred by the journal to which a manuscript is submitted. The existing level of technological and statistical sophistication at the time at which a study is conducted must also be taken into account. More recent authors have benefited from the computer search capabilities available to them in locating source articles as well as in expanded statistical alternatives in processing their data. Quantitative procedures tend to obscure the somewhat contradictory findings of individual research studies while taking into account the additive effects of multiple variables. The inconsistency of variable definitions sometimes limits the extent to which findings across review studies can be compared .

The list of 329 source studies cited in these nine reviews is not exhaustive. Each review included studies not included in others covering the same time span. Differing selection criteria and search procedures may account for some of this, rather than the apparent failure to capitalize on previous reviews.

Those authors who documented their search procedures each went beyond previous lists or citation lists in other reviews in their efforts to uncover additional research studies. The most thorough searches included computer searches, citation lists in identified articles, and manual searches of journals.

While computer searches facilitate the location of articles, those predating the computer abstract databases are less easily found. Potter, Sharpe, Hendee, and Clark (1972), Berdie and Anderson (1974), and Pressley (1976) pioneered the compilation of annotated indexes in mail survey research studies and each was cited in at least one of the reviews. *Indexes to Survey Methodology Literature* (U. S. Bureau of the Census, 1974) might be helpful in locating early references. *The Bibliography of Marketing Research Methofds* (Dickinson, 1986) could be a valuable resource in identifying current as well as older articles. Dillman and Sangster (1990) cover the years 1974-1989 and provide an update for the extensive bibliography found in Dillman (1978). Public Opinion Quarterly maintains a cumulative index by topic to articles it publishes.

The choice of keywords or descriptors used in computerized searches of abstract databases influences the results. Some of the reviewers may not have discovered relevant articles because the terminology used in their searches was too limited. Searches using "response rate" did not produce identical lists of citations to those when "response rates" was used, except in the ABI/Inform database which shortened the plural terms to the singular forms.

Differences in databases used and their contents also influence the outcomes of the search efforts. PsycINFO is an online database of psychological publications that includes dissertations, which are not included in PSYCLit. The Social SciSearch database, used by some of the review authors, only permits searches of the titles. Social SciSearch is the online version of Social Sciences Citation Index, which is very inclusive. Having any type of computerized search process, though limited to title, is a distinct improvement over using the bound volumes of the Index. The databases that were searched in the present study (ERIC, ABI/Inform, PSYCLit, and Sociofile) were all available on CD-ROM and all contained abstracts as well as titles and descriptors or keywords. In searching the databases, the entire entry (including abstract) was searched for the search term(s).

Fox, Crask, and Kim (1988) expressed concern that using only published studies might bias the results, because studies that failed to find significant effects might not appear in print. They did note, however, that published studies were easier to obtain. Because many studies have more than one variable being manipulated at a time, nonsignificant results for individual factors were more prevalent than significant ones in their data. Only 23 percent of the 214 effect estimates in their study were statistically significant.

Few journals have been consistent publishers of mail survey response rate studies through the years. The number of journal articles found by the reviewers may, to some degree, be related to the search procedures employed by the reviewers. Those journals searched most thoroughly (manually, issue by issue) had the largest numbers of citations in the overall list of 329 source citations. The ten journals manually

searched by Yammarino, Skinner, and Childers (1991), are the ten journals with the largest numbers of citations in the total list of source articles. Similarly, the three journals searched by Fox, Crask, and Kim (1988) were the three with the largest numbers of source article citations, and four of the five journals thoroughly searched by Bruvold and Comer (1988) are the most frequently cited journals in the total list.

Publication of studies on mail surveys have been published primarily in journals with audiences in public opinion research and marketing. Sociological and psychological journals have also been open to such studies, but to a lesser extent. By broadly defining educational journals (Journal of Educational Research, Educational Research Bulletin, Journal of Educational Psychology, Research in Higher Education, Vocational Guidance Quarterly, Journal of Experimental Education, and College Student Journal), there was a total of 10 articles (3 percent) in the list of 329 source citations that can be attributed to any educational journals. It is small wonder that education was omitted from Dillman's (1991) statement that "Statistics, psychology, marketing research, economics, and the various health sciences are disciplines in which research efforts to improve mail survey methods are regularly conducted and reported" (p. 226).

It is discouraging to note that no review articles were located in education journals through the ERIC search. Another observation that can be made at the conclusion of this study is that there was not a single article on the source citation list of 329 that was published in an American Educational Research Association (AERA) journal (i.e., American Educational Research Journal, Review of Educational Research, Journal of Educational Statistics, Educational Evaluation and Policy Analysis, Review of Research in Education). This is particularly disturbing to those who consider AERA as the foremost organization for researchers in the field of education. While AERA publishes the Journal of Educational Statistics, this publication does not provide a forum for studies on design issues relating to research on mail survey methods. Included in the 137 ERIC citations resulting from the computerized search were 20 papers on survey research methodology that had been presented at annual meetings of AERA. This finding supports the contention that the descriptors used in the search were relevant.

Some variables were studied more extensively (by more review authors) than others. It has been fairly well accepted that incentives and followups increase response rates, and this was confirmed by the reviews. Response rates are higher when incentives are used, but the optimal value and type of incentive is elusive. Response rates also increase as additional efforts are made to contact individuals. Special and/or first class outgoing postage appears to be more conducive to responding than lesser forms of postage. There is some evidence that the effectiveness of different types of return postage may be related to the population being surveyed.

Findings are inconclusive regarding sponsorship, questionnaire length, personalization, anonymity, and appeals as they relate to response rates. Some variables produced consistent findings but were included in only one or two reviews. Saliency, school or army populations, and colored paper appear to facilitate response rates while marketing background of the author is an inhibitor. Setting a deadline for responding

and including a postscript on the cover letter had no recognizable effect, either positive or negative, on response rate.

As was pointed out by Bruvold and Comer (1988), some variables related to a particular survey are fixed, while others offer varying degrees of opportunity for manipulation. The sample source, population type, relationship of the respondent to the sponsor, and the year in which the survey is conducted are not subject to manipulation. It has been demonstrated that a response rate prediction model that is developed without respect to population may not be applicable for a specific population, such as those involved in industrial surveys (Jobber & Saunders, 1993). The effect of at least some mail survey procedures have also been shown to vary according to the year in which the survey was conducted as well as whether the population was a consumer or an institutional group (Yammarino, Skinner, & Childers, 1991).

While much can be learned from review articles, this study calls attention to the disparity with which the procedures used in the integrated review articles were documented. Areas in which findings were inconsistent may be those most prone to situation specificity and should, perhaps, be the focus of future research rather than continued study of variables for which findings seem to generalize, such as incentives and repeated contacts.

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